AF

**PATENT APPLICATION**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE HONORABLE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Application of

Robert C. U. YU et al.

Group Art Unit: 1733

Application No.: 09/683,326

Examiner: J. HARAN

Filed: December 14, 2001

Docket No.: 118093

For: FABRICATION METHOD FOR AN ELECTROSTATOGRAPHIC MEMBER HAVING A VIRTUAL FLEXIBLE SEAMLESS SUBSTRATE

**REPLY BRIEF**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

The following remarks are directed to the new points of argument raised in the Examiner's Answer dated April 29, 2005.

A. Motivation to Combine References

In arguing that it would have been obvious to combine U.S. Patent No. 5,997,974 to Schlueter et al. (hereinafter "Schlueter '974") with U.S. Patent No. 5,688,355 to Yu (hereinafter "Yu"), the Examiner's Answer argues that there is ample and sufficient motivation to modify the process of Yu based on the teachings of Schlueter '974. In support of this position, the Examiner's Answer indicates that "the electrostatographic belts of Yu and Schlueter '974 essentially have the same layers in the same order"; "the advantages of applying the layers after seaming the support sheet includes having a 'seamless' electrostatographic belt with a smooth and seamless surface"; and "Schlueter '974 teaches that

seaming the belt first and then applying the other layers is 'by far the most economical.'" Examiner's Answer, page 9, line 19, to page 10, line 13.

However, neither Yu nor Schlueter '974 provide any motivation to combine their teachings in the way suggested in the Examiner's Answer. In particular, Schlueter '974 does not teach or suggest that seaming the belt first and then applying the other layers is more economical than a process where cuts are made through various layers to form a seamed belt, as described in Yu. Instead, Schlueter '974 indicates that seaming the belt first and then applying the other layers is more economical than applying overcoatings to an unseamed belt and then filling the seamed areas from the back of the belt. Col. 10, lines 34-42. Thus, the teaching in Schlueter '974 that seaming the belt first and then applying the other layers is most economical does not in any way motivate one of ordinary skill in the art to combine Schlueter '974 with Yu so as to render obvious the present claims.

In addition, there is clearly no motivation to modify the teachings of Yu such that the flexible sheet that undergoes ablation is a substantially homogenous material. Although the example provided in Schleuter '974 describes cutting a polyimide material to from a belt, this polyimide material is not described as a substantially homogeneous material and Schleuter '974 does not teach or suggest any advantage to this material being substantially homogenous. In particular, neither Schleuter '974 nor Yu teach or suggest that laser ablation of a multiple layered material poses problems with proper absorption of laser energy. Specification, ¶[0037]. Thus, even assuming that it would have been obvious to add at least one of the layers of Yu after forming the belt in order to form a seamless layer, there would still have been no motivation to apply all but one of the layers after forming the belt, such that the sheet that undergoes ablation to form the belt is a substantially homogenous material.

Furthermore, Schleuter '974 teaches away from the recited combination by teaching the use of non-overlapping puzzle cuts rather than overlapping features. In particular,

Schleuter '974 states that overlapping techniques provide a bump or other discontinuity in the belt surface leading to a height differential between adjacent portions of the belt, which leads to performance failure in many applications. Col. 1, lines 56-65. Thus, any combination of Schleuter '974 with Yu would clearly not teach the claimed invention, which is directed to overlapping features rather than non-overlapping puzzle cuts. See *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984), which held that a prior art reference must be considered in its entirety, including portions that would lead away from the claimed invention.

Neither Yu nor Schleuter '974 provide any motivation to combine these references as suggested in the Examiner's Answer. Therefore, the rejections of claims 1, 11, 16 and 21 and of claims 2-10, 12-15, 17, 18, 20 and 22, which depend from one of claims 1, 11, 16 and 21, should be withdrawn.

B. Substantially No Added Seam Thickness

In arguing that the invention of claims 16 and 21 would have been obvious, the Examiner's Answer indicates that "Appellants indicated in their specification that Yu teaches forming a seam of little (substantially no) added thickness." Examiner's Answer, page 11, lines 16-17. Appellants agree that their specification indicates at paragraph [0022] that the belt obtained by the process described in Yu "has a welded seam of little added thickness." In addition, seams described in Yu clearly have little added thickness compared to what the present application refers to as a "typical flexible imaging member" formed by overlapping ends of a sheet, which is indicated to be "about 1.6 times thicker in the seam region than elsewhere." ¶[0012] However, Appellants do not agree that this recitation of "little added thickness" is equivalent to the recitation in claims 16 and 21 of the present application of "a seamed belt having substantially no increase in belt thickness at the seam."

First, contrary to the assertions in the Office Action, Yu does not teach "a seamed belt having substantially no added seam thickness." Instead, Yu specifically indicates that "[t]he welded seam belt of this invention preferably has a seam thickness of less than about 120 percent but greater than about 103 percent of the total thickness of the original sheet." Col. 17, lines 41-44. This added seam thickness is clearly depicted in Figures 6B, 7B, 8B and 9B of Yu. Yu provides no motivation to prepare a seamed belt having a seam thickness of less than about 103 percent of the total thickness of the original sheet. In fact, Yu teaches away from such an embodiment indicating that "an overlap region thinner than 103 percent will not absorb sufficient mechanical pounding energy from the ultrasonic horn action during seam welding process, and therefore, produces a weak seam strength due to incomplete polymer fusing at the overlap." Col. 17, lines 47-51.

Second, the recitation in claims 16 and 21 of "a seamed belt having substantially no increase in belt thickness at the seam" clearly does not encompass the seamed belt of Yu having a seam thickness of greater than about 103 percent of the total thickness of the original sheet. The inventors of the present application were clearly aware of the process described in Yu. In fact, one of the inventors of the present application, Robert Yu, is the inventor of Yu. In addition, as discussed above, Yu is discussed in the present application. In discussing Yu, the present application indicates that the belt obtained by the process described in Yu "has a welded seam of little added thickness." In addition, the present application indicates at paragraph [0038] that "[p]rior efforts in which portions of the belt ends are ablated away with excimer lasers before overlap reduce seam region thickness and related problems," but that "these efforts still leave margins for improvement." The present application also indicates at paragraph [0038] that a belt of the present invention "has far smaller seam region thickness increases than any prior method of manufacture." In view of the clear teachings in the present application of improving on the seam thickness described in Yu, it is clear that the recitation

in claims 16 and 21 of "a seamed belt having substantially no increase in belt thickness at the seam" does not encompass the seamed belt of Yu having a seam thickness of greater than about 103 percent of the total thickness of the original sheet.

The Examiner's Answer further argues that "there is no indication that the present invention has found a way to further reduce the seam thickness in a seam formed utilizing the method of Yu" and that "[t]his is evidenced in Appellants' own specification at paragraphs 0039 and 0040 where Appellants state that any increase in seam thickness using the prior art laser ablation method (Yu) is eliminated when applying the coatings after the seaming operation to form a 'seamless' belt." Examiner's Answer, page 11, line 18, to page 12, line 3.

It is noted initially that the present specification does not state that any increase in seam thickness using the prior art laser ablation method of Yu is eliminated when applying the coatings after the seaming operation. Instead, paragraphs [0039] and [0040] teach that a belt with "substantially no increase in belt thickness in the seam region" can be formed by "overlapping said first desired pattern with said second desired pattern." Page 12, lines 19-22 (¶0039). Although these paragraphs teach that coating the belt formed thereby results in a "seamless" belt, this teaching does not imply that coating the belt eliminates any increase in seam thickness. It is noted that the recitation in claims 16 and 21 of "substantially no increase in belt thickness at the seam" is different from the recitation in all of claims 1, 11, 16 and 21 of a "seamless" belt. In particular, as pointed out in the Appeal Brief at the paragraph bridging pages 7 and 8, the term "seamless" refers to a belt in which at least the outer layer does not contain a seam, such that the belt, in its entirety, acts as a seamless belt. The recitation that the belt is "seamless" does not imply that the belt has "substantially no increase in belt thickness" at the region of a seam in an underlayer of the belt.

In addition, it is clear from the present application that the invention has "found a way" to further reduce the seam thickness as compared to a seam formed by the method

described in Yu. In particular, as discussed above, the present application, which specifically discusses Yu, indicates at paragraph [0038] that a belt of the present invention "has far smaller seam region thickness increases than any prior method of manufacture." Thus, the present specification clearly does describe, and claims 16 and 21, clearly claim, belts having reduced seam thickness as compared to seams formed by the method described in Yu.

Contrary to the assertions in the Examiner's Answer, Yu clearly does not teach or suggest "a seamed belt having substantially no increase in belt thickness at the seam," as recited in claims 16 and 21. Therefore, the rejection of claims 16 and 21 and of claims 17, 18, 20 and 22, which depend from one of claims 16 and 21, should be withdrawn for this additional reason.

C. Conclusion

It is respectfully submitted that the remaining points of argument set forth in the Examiner's Answer were fully addressed in the Appellants' Appeal Brief. For the reasons set forth herein and in the Appeal Brief, it is respectfully requested that the rejections of claims 1-19, 21 and 22 under 35 U.S.C. §103 be reversed.

Respectfully submitted,

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